

REMARKS

Claims 1-14 are pending in the application.

Claim Rejections - 35 U.S.C. § 102

(a) Claims 2-4 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Mae et al. (US Patent Publication No. 2004/0144136). This rejection is respectfully traversed.
(Claims 2 and 3)

Claims 2 and 3 have been amended to claim:

a casing having a water inlet and a water outlet allowing a water current to flow from the inlet, through the casing, and out from the outlet in a horizontal direction; and
wherein the electrodes extend along a direction of water flowing out of the inlet.

The foregoing features are disclosed in Fig. 5 of the present application.

Mae discloses, in Figs. 3 and 4, an electrolyzing chamber 32 that accommodates electrodes 33. The chamber 32 has a water communication path 35 (corresponds to the “water inlet” of the present invention) through which water flows into the chamber 32, and a water communication path 34 (corresponds to the “water outlet”) through which water flows out of the chamber 32. As shown in the figures, the electrodes 33 extend in a direction that opposes the communication path 35 so that the water from the communication path 35 flows directly against the electrodes 33. Therefore, in Mae, the electrodes 33 does not extend “along a direction of water flowing out of the inlet,” as recited in claim 2.

Further, in Mae, the water from the communication path 35 flows upward and is discharged from the communication path 34 as shown in Fig. 4, and does not flow “in a horizontal direction,” as recited in claim 2.

Therefore, Mae fails to disclose or suggest the “casing” and the “electrodes” as recited in claim 2.

Claim 3 is allowable at least for the similar reasons as stated in the foregoing with regard to claim 2.

(Claim 4)

Claim 4 has been amended to claim:

a casing having a casing body and a lid attached to the casing body, the lid having a support that extends into a chamber defined inside the casing; and

a sleeve that engages with a surface of an electrode and makes contact with the support when the lid is attached to the casing body.

This feature is disclosed in Fig. 6, in which a sleeve 174, which engages with a surface of an electrode (113 or 114), is in contact with a support 176 that extends from a lid 110b into a chamber defined inside the casing 110.

Mae discloses in Fig. 4, an electrolyzing chamber 32 that accommodates electrodes 33. The electrodes 33 have terminals 84 that extend downward and penetrate from the chamber 32. As shown in the figure, Mae also discloses terminal covers 85 that surround the terminals 84 in order to maintain the chamber 32 watertight.

First, the chamber 32 of Mae (corresponds to the “casing” of the present invention) does not have “a casing body and a lid attached to the casing body, the lid having a support that extends into a chamber defined inside the casing,” as required in claim 4.

Further, Mae does not have “a sleeve that engages with a surface of an electrode and makes contact with the support when the lid is attached to the casing body,” as required in claim 4.

Accordingly, Mae fails to disclose or suggest the “casing” and the “sleeve,” as recited in claim 4.

In view of the above, the Examiner is respectfully requested to reconsider and withdraw this rejection.

(b) Claim 5 has been rejected under 35 U.S.C. § 102(e) as being anticipated by King et al. (US Patent Publication No. 2004/0108261). This rejection is respectfully traversed.

Claim 5 has been amended to claim:

wherein the water outflow port is given a smaller cross-sectional flow area than the water inflow port. (*emphasis added*)

Support for this feature is disclosed in page 19, lines 14-15 and page 30, lines 20-21 of the specification as filed.

In the Office Action, the Examiner alleges that King discloses a dispensing apparatus in which a cross sectional area in the dispenser outlet is substantially larger than a cross sectional flow area in the inlet.

As alleged by the Examiner, King discloses, in Fig. 1, a high pressure line 28 connected to an inlet of a dispenser 19 and an egress passage 20 connected to an outlet of the dispenser 19. As shown in the figure, a diameter of the line 28 at an upper end appears to be larger than a diameter of the passage 20. However, the upper end of the line 28 is provided with a restrictor 15 that restricts a cross-sectional flow area of the line 28 to be smaller than a cross-sectional flow area of the passage 20. Therefore, King fails to disclose or suggest “wherein the water outflow port is given a smaller cross-sectional flow area than the water inflow port,” as recited in claim 5.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(c) Claim 7 has been rejected under 35 U.S.C. § 102(b) as being anticipated by Hayes et al. (USP 4,525,253). This rejection is respectfully traversed.

Claim 7 has been amended to claim:

wherein a bottom surface of the casing and an inner surface of a lowest portion of the water outflow port share a common plane.

This feature is disclosed in Fig. 5 of the present application, in which a bottom surface of a casing body 110 is continuous with a lowest portion of the water outlet 112.

Hayes discloses, in Fig. 2, a container having an input 58 and an output 60 provided at a position lower than the input 58. In Hayes, however, a lowest portion of the output 60 (and thus an inner surface of a lowest portion of the output 60) is substantially higher than a bottom surface of the container 56. Therefore, Hayes fails to disclose or suggest “wherein a bottom surface of the casing and an inner surface of a lowest portion of the water outflow port share a common plane,” as recited in claim 7.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

Claim Rejections - 35 U.S.C. § 103

(a) Claims 1, 8, 9, 11, and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishiyama (JP 2002-263649). This rejection is respectfully traversed.

With regard to claim 1, the Examiner alleges that Nishiyama discloses:

wherein the silver electrodes may be arranged in such a manner that the electrode spacing (inter-electrode distance) at one side may be larger than at the other side in order to increase production efficiency of complex ion (page 19, paragraph 25).

Applicants respectfully disagree.

In paragraph [0025], Nishiyama describes the fifth embodiment shown in Fig. 7, which appears to be missing from the publication. With regard to this embodiment, Nishiyama states:

Water that has entered the electrolysis chamber 7 is divided into two paths. One is a water passage for a sodium hypochlorite ion generator 2, and in this portion, a distance between electrodes for generating sodium hypochlorite ions is narrow. . . . In the other path among the two paths, silver electrodes are disposed, and here it is possible to increase the distance between the electrodes. . . .

In view of this, Applicants submit that Nishiyama merely discloses two groups of electrodes (one group for generating sodium hypochlorite ions, and the group for generating silver ions), and does not disclose or suggest the distance between a distance between one end of a pair of electrodes is different from a distance between another end of the pair of electrodes. Therefore, Nishiyama fails to disclose or suggest “an interval between the electrodes becomes narrower from an upstream side to a downstream side with respect to a water current flowing through an inside of a casing of the ion elution unit,” as recited in claim 1.

Claims 8, 9, 11, and 13, dependent on any one of claims 1-7, are allowable at least for their dependency on any one of claims 1-7.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(b) Claim 6 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mae. This rejection is respectfully traversed.

With regard to claim 1, the Examiner acknowledges that Mae fails to explicitly teach wherein a cross sectional area of the device gradually decreases from an upstream (water inlet) to a downstream (water outlet) side. The Examiner, however, alleges that Mae does disclose

modifying the size of the housing of the water treatment unit in order to achieve space saving as well as to facilitate the water flow throughout the system, by referring to page 7, paragraphs 85 and 88 of the Mae reference. Applicants respectfully disagree.

With regard to the space saving function, Mae states, in paragraph [0085]:

Where the electrolyzing chamber 32 is of a thin type fitted on the outer side surface 66 as the outer surface of the outer tub 2 . . . an increase in the size of the housing is suppressed . . . Thus, space saving can be achieved. Where the electrolyzing chamber 32 is of a thin type fitted on the bottom 64 as the outer surface of the outer tub 2, the piping arrangement for the drainage of the used water . . . can be simplified, thereby achieving space saving.

In other words, Mae merely disclose that space saving can be achieved by fitting the electrolyzing chamber 32 (corresponds to the “casing” of the present invention) at specified positions of the outer tub 2, and is totally silent as to the shape of the electrolyzing chamber 32. Therefore, Mae fails to disclose or suggest “a cross-sectional area of an interior space of the casing of the ion elution unit gradually decreases from an upstream side to a downstream side,” as recited in claim 6.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(c) Claims 10, 12, and 14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishiyama in view of Miyazaki (JP 2001-276828). This rejection is respectfully traversed.

Claims 10, 12, and 14, dependent on any one of claims 1-7, are allowable at least for their dependency on any one of claims 1-7.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

Conclusion

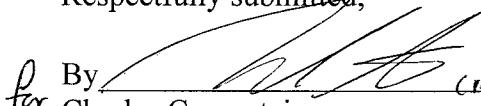
Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and objections, and allowance of the pending claims are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Maki Hatsumi, Reg. No. 40,417, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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